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Monitoring Pesticides for TMDL Development in the San Joaquin River Basin, California

National Water Quality Monitoring Council Conference
May 20-23, 2002; Madison, WI

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Monitoring Components

- **2000 Dormant Spray**
  - **- 2 storms (January/February)**
  - **- 5 major river; 8 minor tributaries**
- **2001 Dormant Spray**
  - **- 2 storms (January/February)**
  - **- 6 major river; 1 minor trib; 1 storm drain; 8 rainfall**
- **2001 In-Season**
  - **- weekly, April through August**
  - **- 8 major river; 4 minor tributaries**

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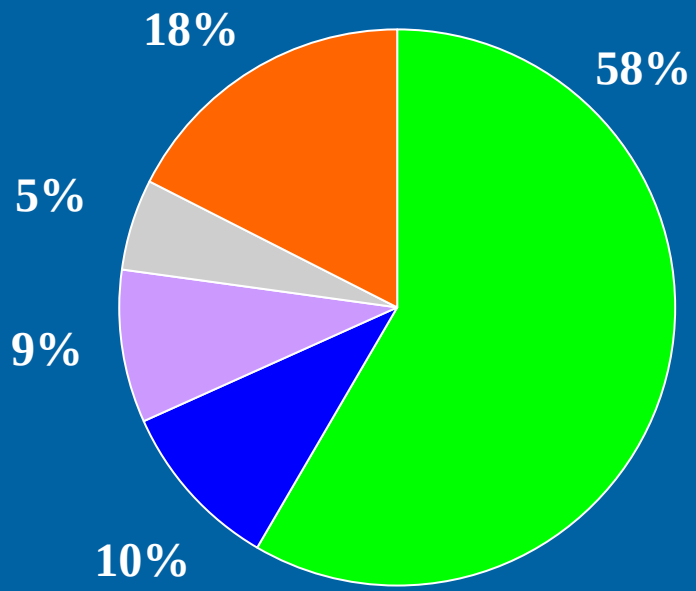
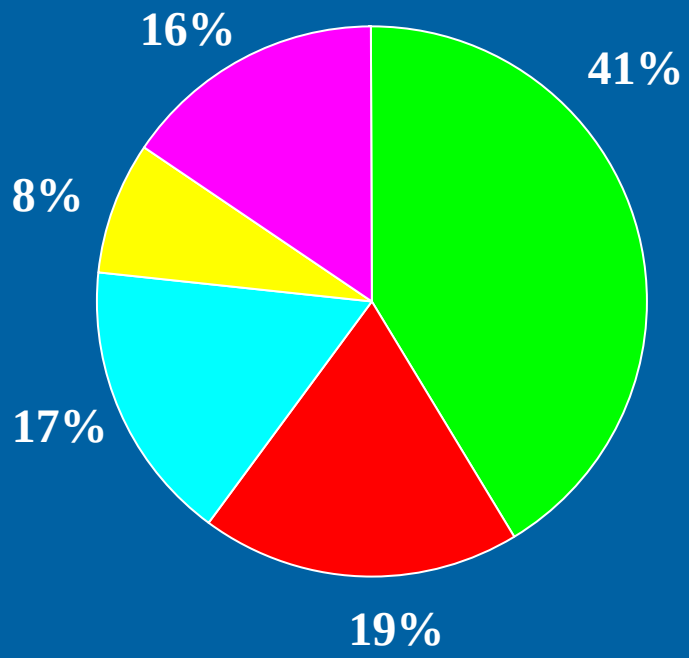
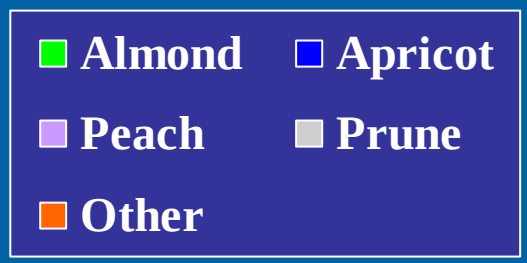
Ancillary Data – Main Agricultural Uses of Diazinon and Chlorpyrifos, 1995-99

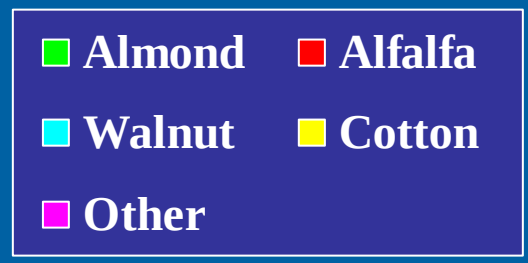


Diazinon



Chlorpyrifos





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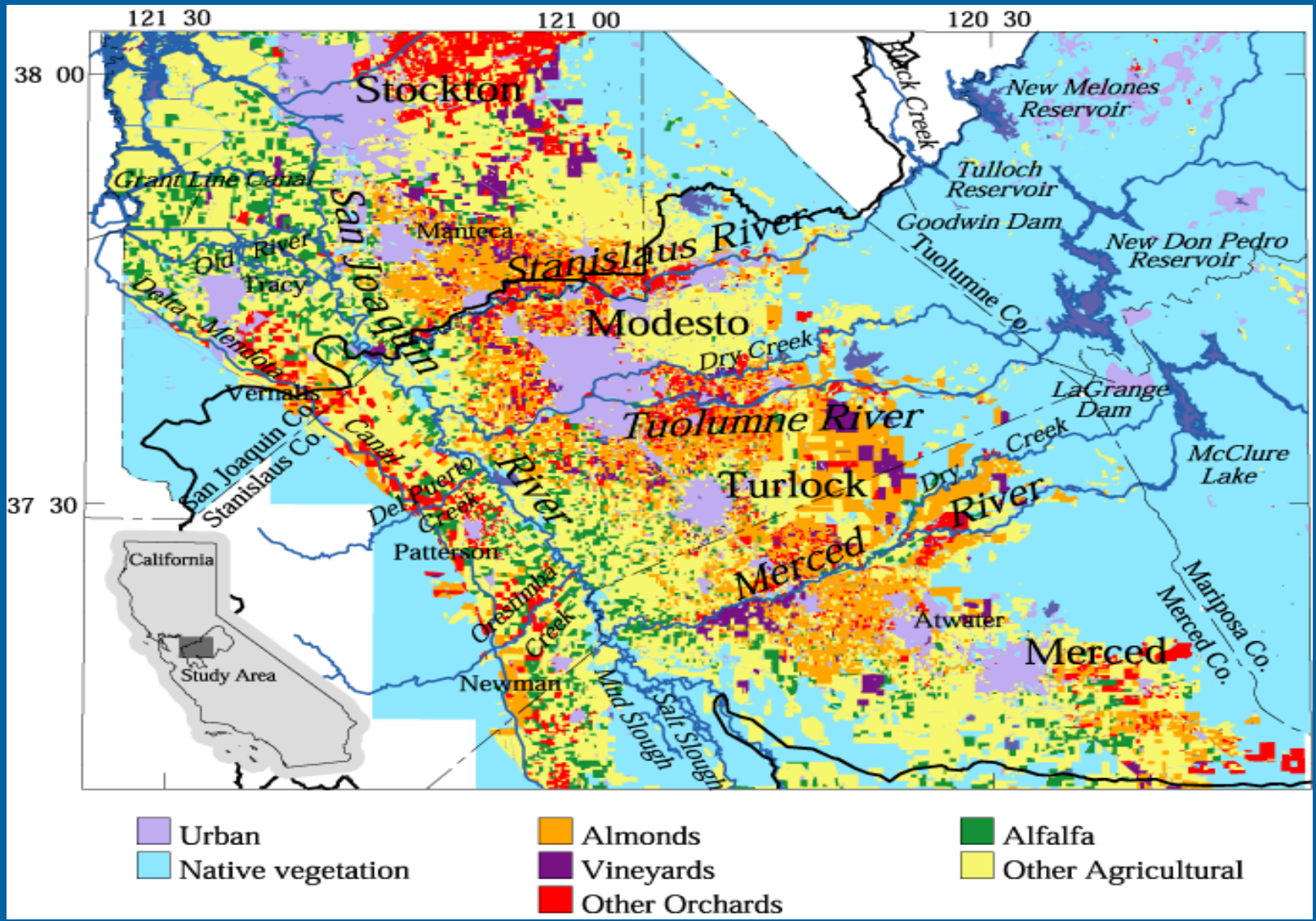
Ancillary Data – Land Use



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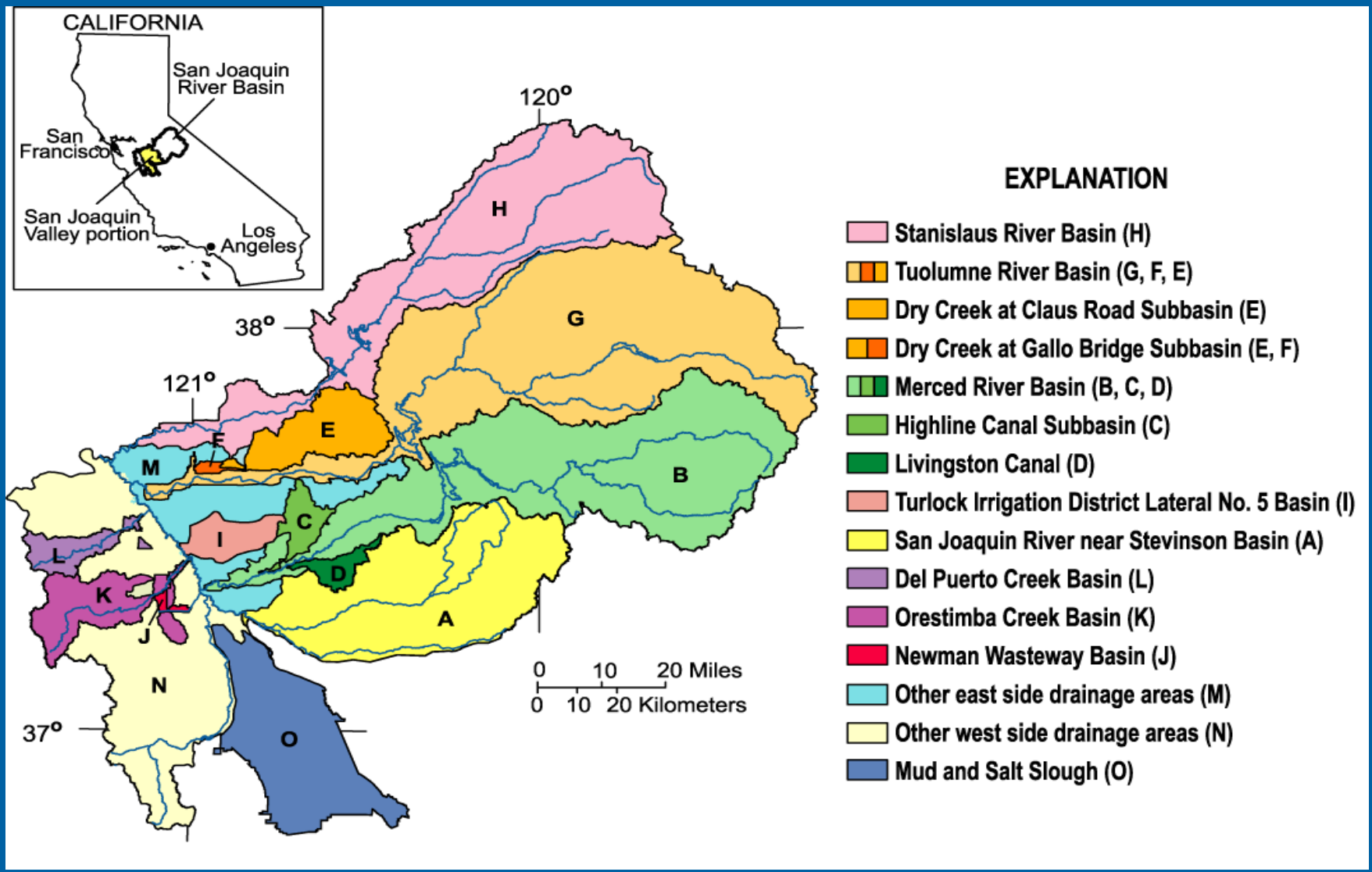
Ancillary Data – Drainage Basins



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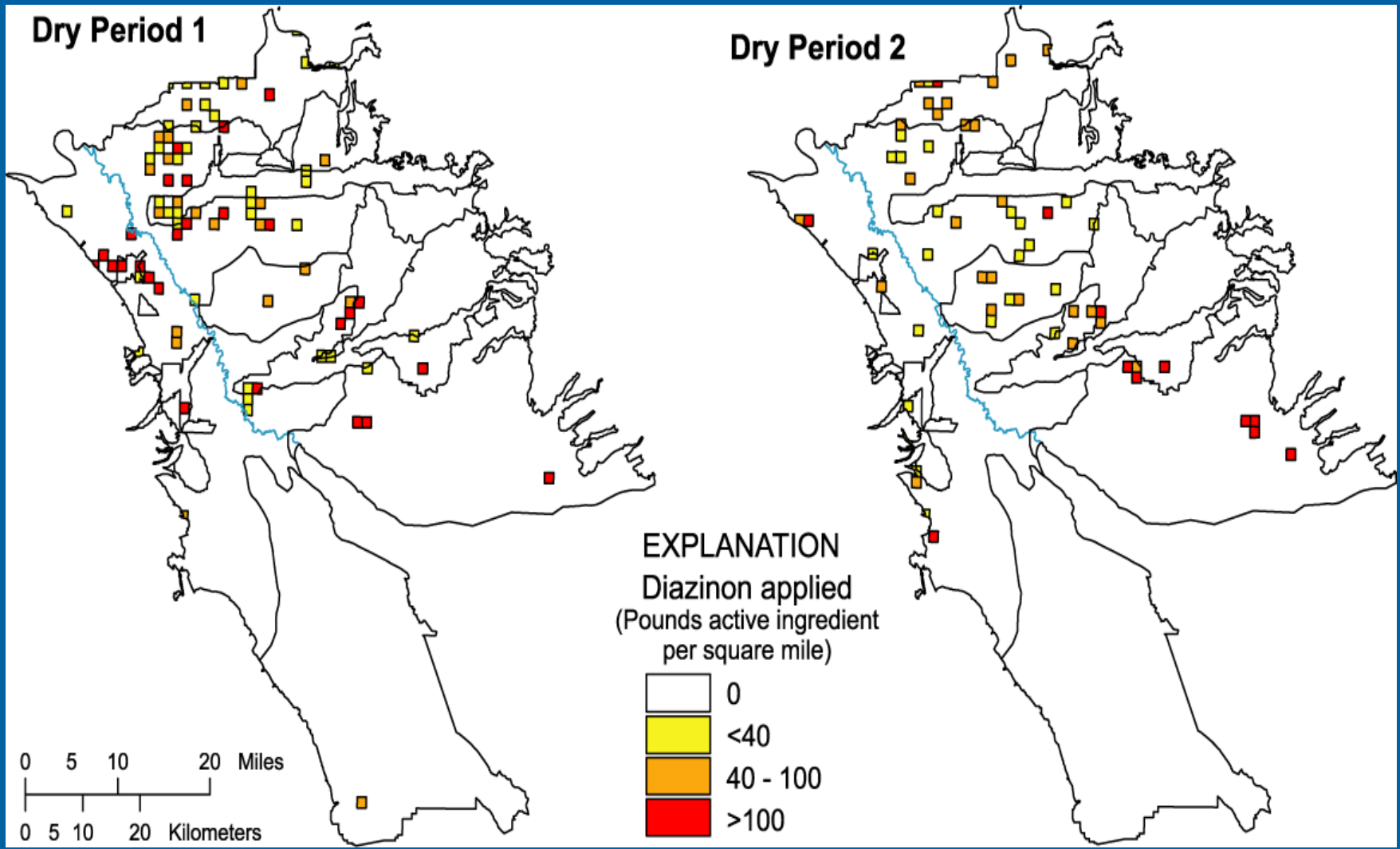
Ancillary Data – Diazinon Application



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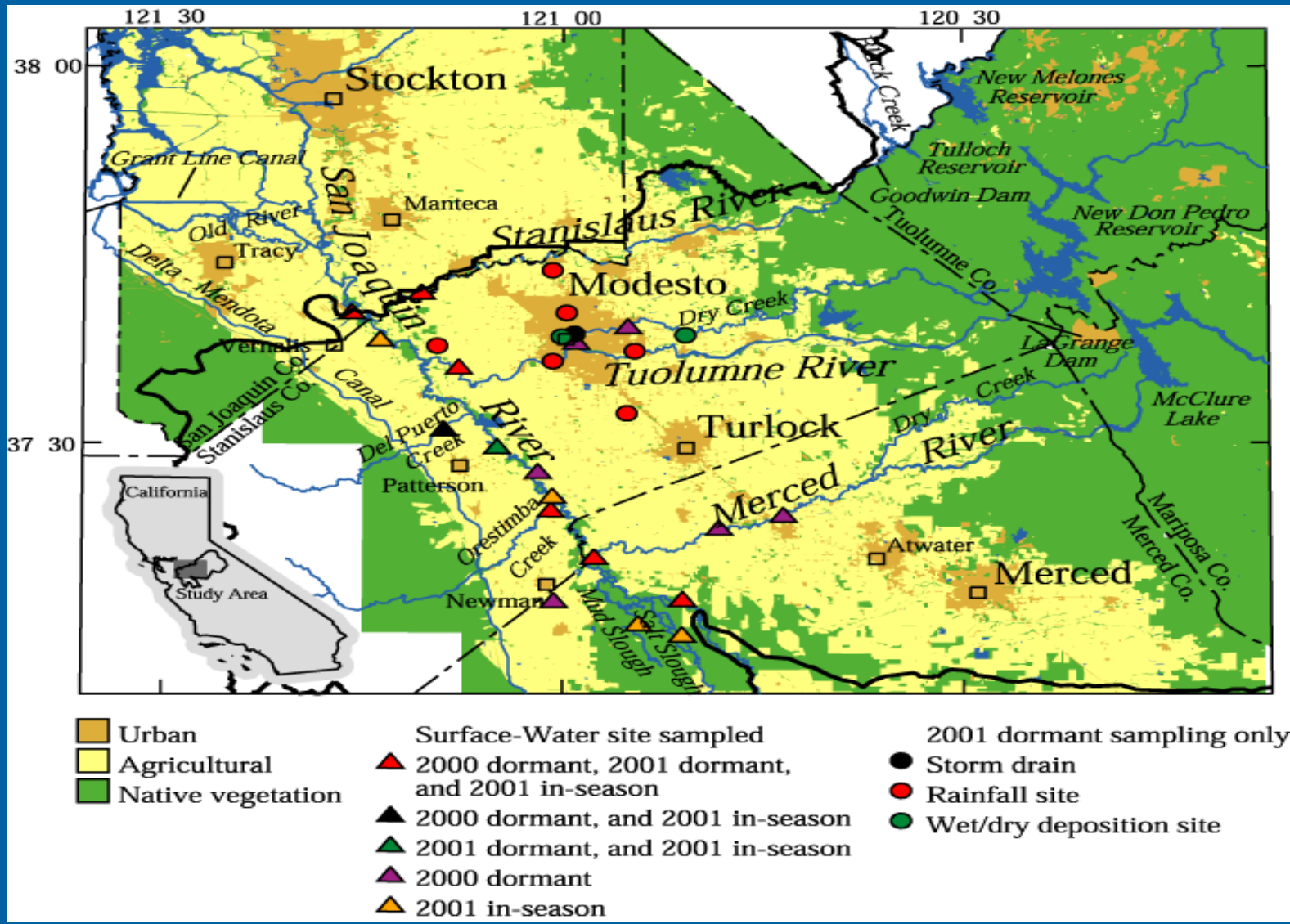
Monitoring Sites



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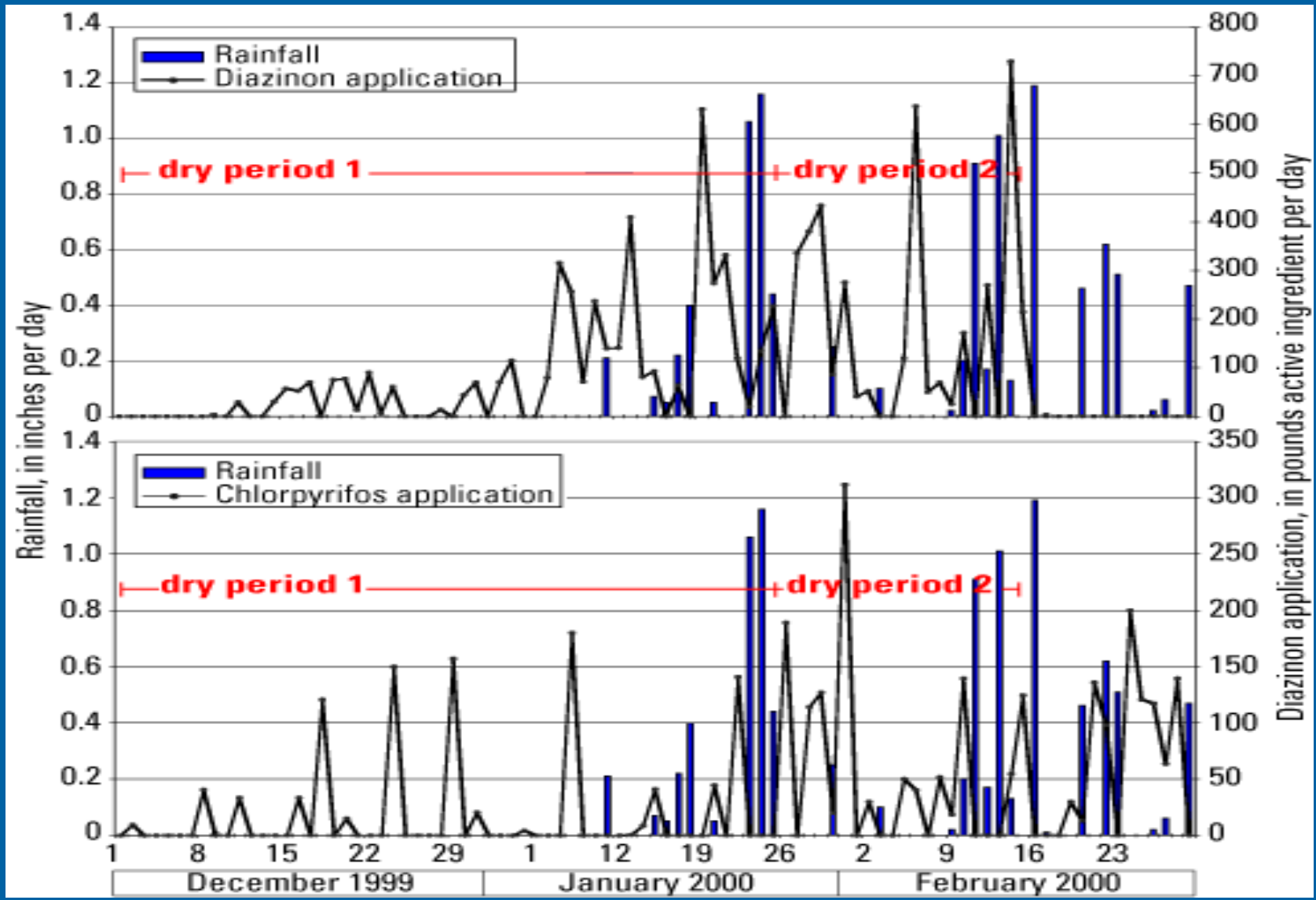
Monitoring Design – Application & Rainfall



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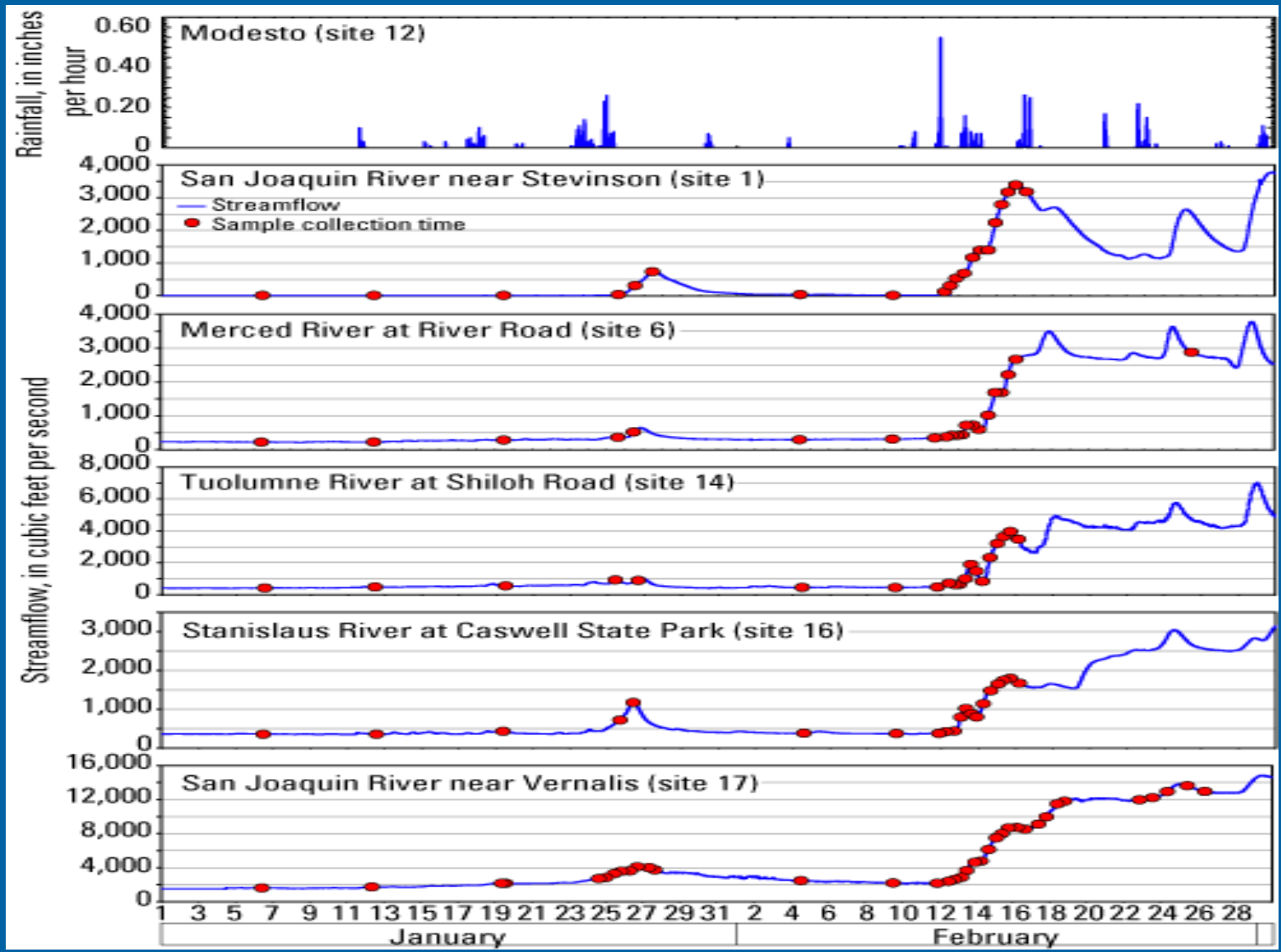
Monitoring Design – Sample Collection



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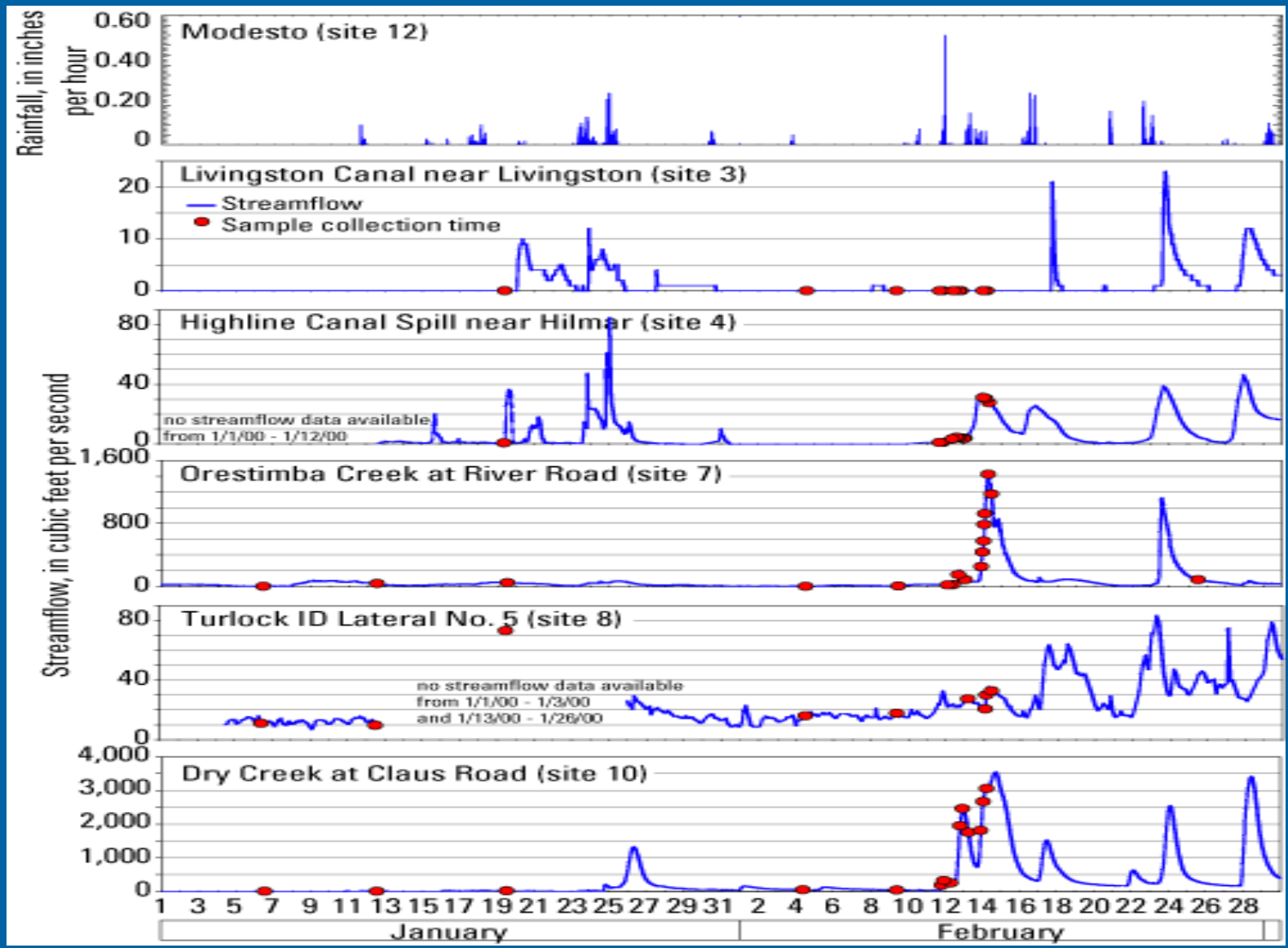

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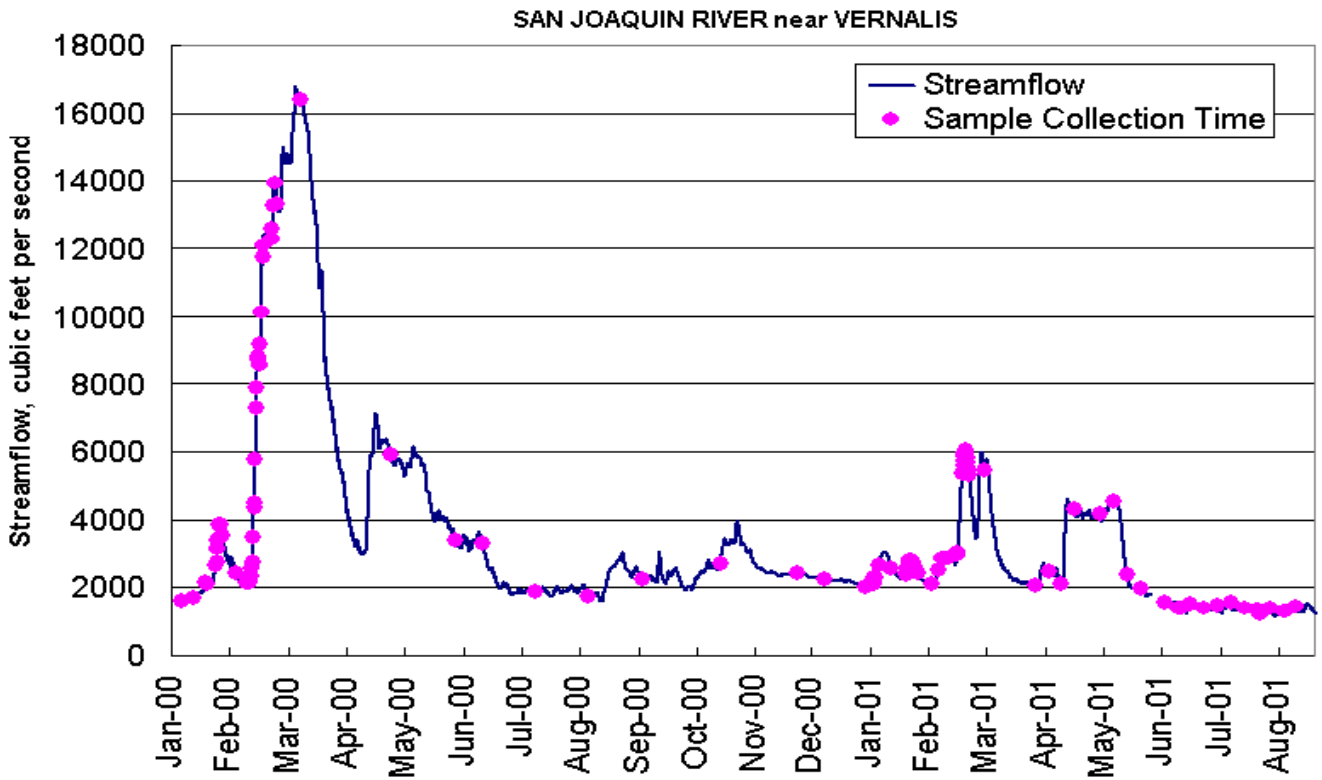

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QA/QC

- **Blanks**
  - **24 field blanks**
- **Replicates**
  - **34 replicates (mostly split; some sequential)**
- **Spikes**
  - **16 lab-spiked environmental samples**
- **EWI versus Grab**
  - **11 simultaneous collections**
- **Environmental Samples**
  - **639 (about 12 percent QC overall = 85/724)**

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Data Interpretation

- Concentrations
- Instantaneous loads
- Total storm and nonstorm loads
- Load as % of application by subbasin
- Yield per contributing subbasin area

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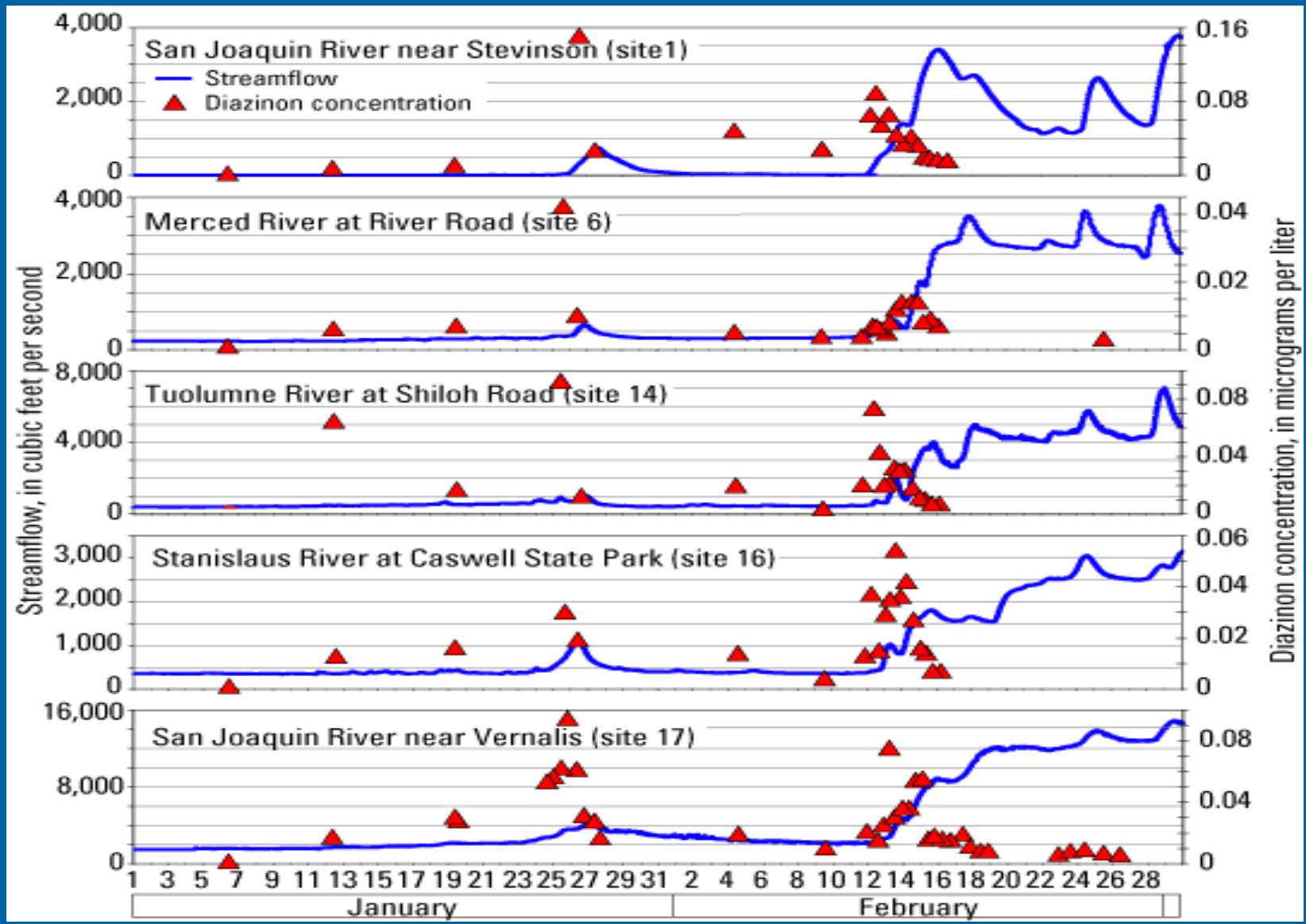
Diazinon Concentrations



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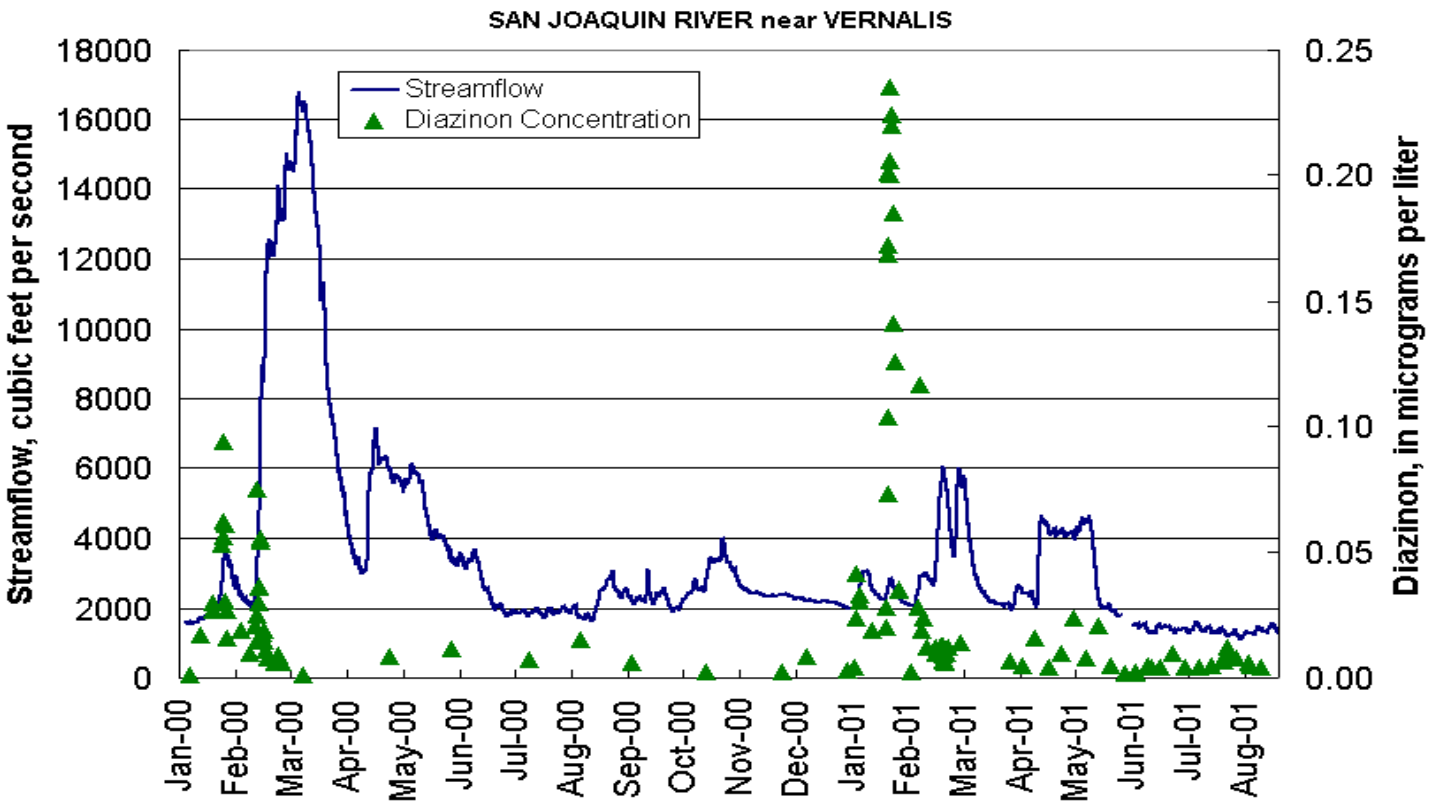
Diazinon Concentrations



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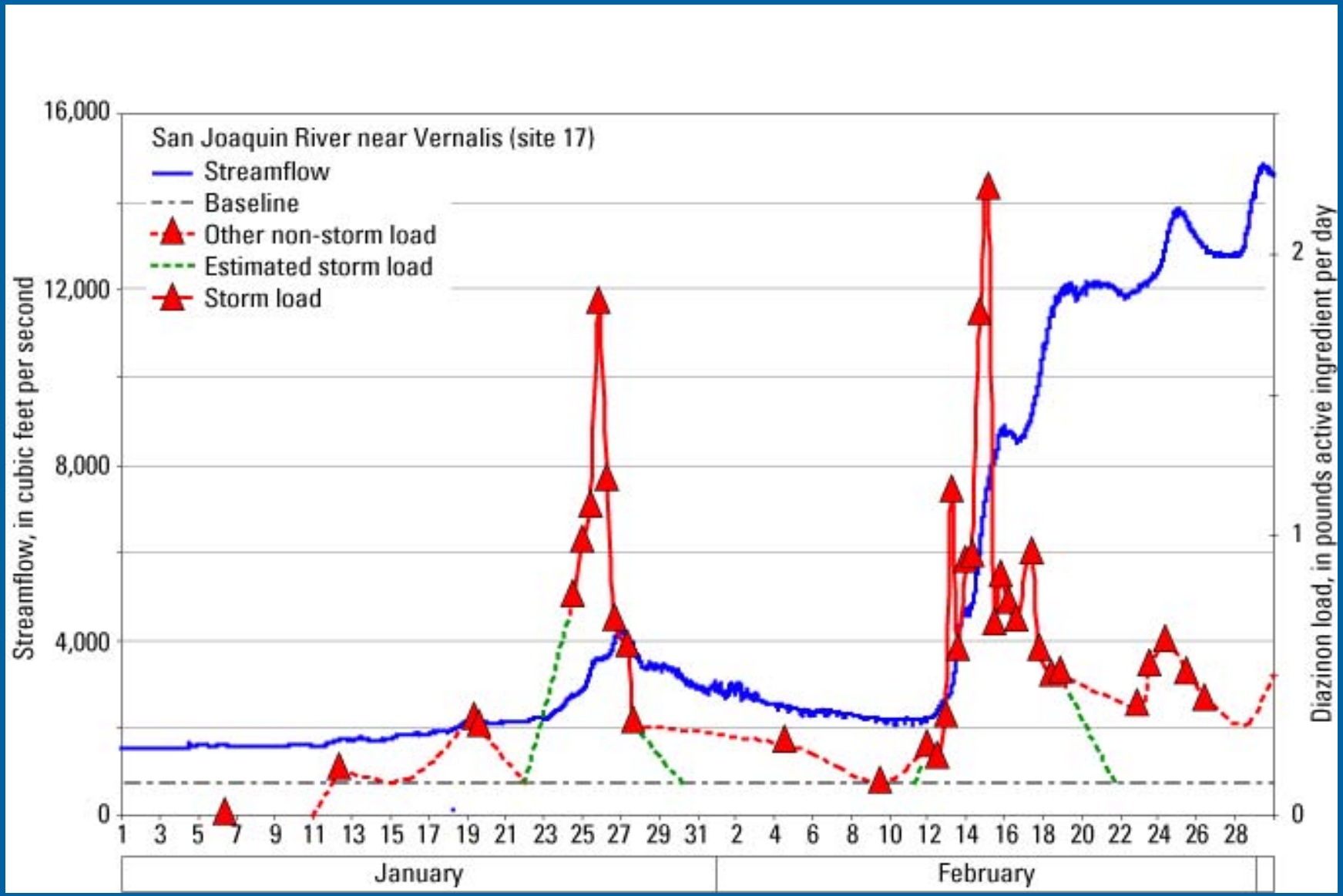
Diazinon Loads



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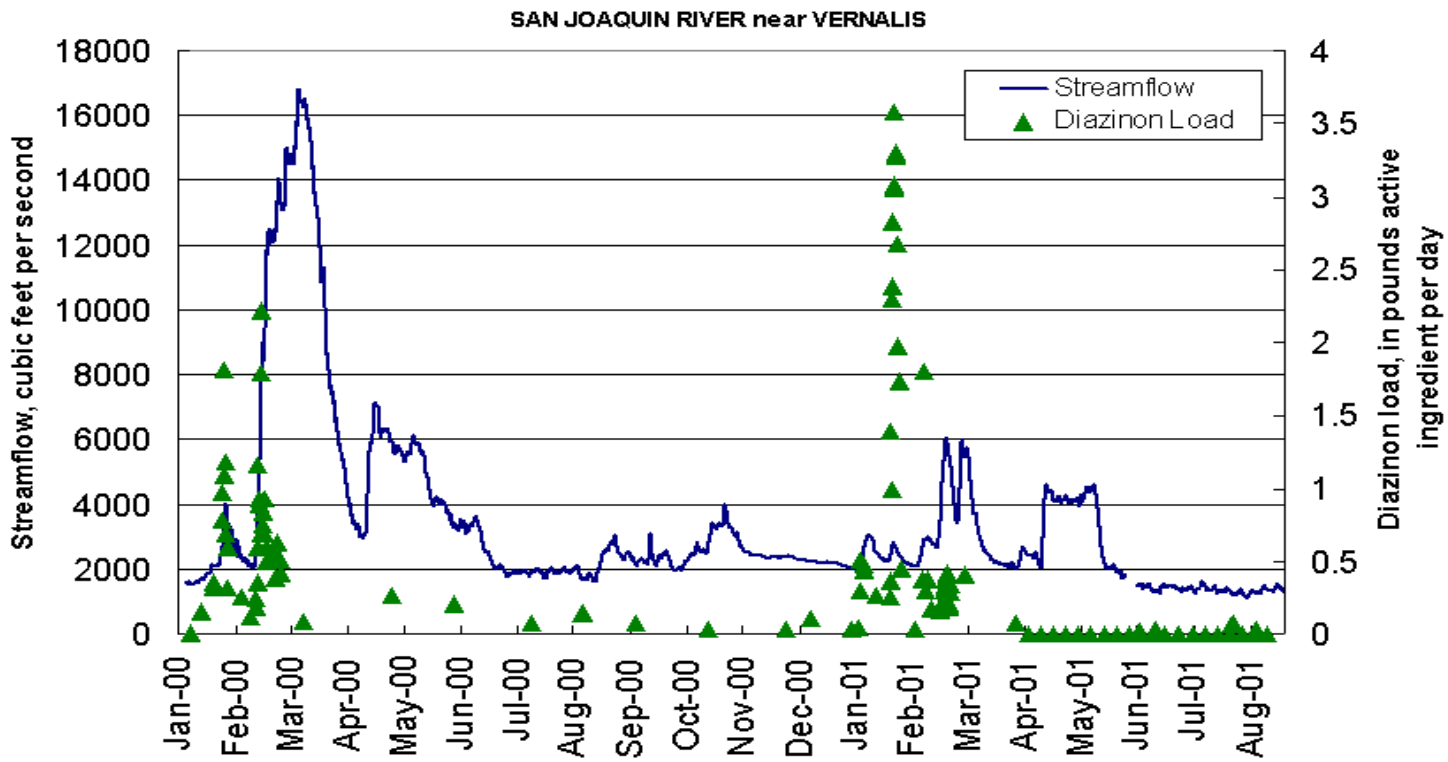
Diazinon Loads



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Conclusions

- Sampling frequency is determined by pesticide application and hydrology
- Real-time hydrologic information is essential to storm sampling
- Ancillary data is very useful for site selection and data interpretation

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